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MEMORANDUM

OG-08-06-530

Date: June 30, 2008

To: Interested Members of the Public

From: Ravalli County Planning Department *RD*

Re: Misprint in Ravalli County Subdivision Regulations Approved on May 24, 2007

The following section of the Ravalli County Subdivision Regulations was approved by the County Commissioners by Resolution 2019 on December 22, 2006. These changes to the floodplain analysis and waiver request requirements were mistakenly left out of the version recorded on May 24, 2007. Please replace Section 3-1-5 (a.) (xl.) with the attached regulation.

Section 3-1-5 (a.)

xl. Floodplain analysis or waiver request, is required as follows:

- A. When Required. A floodplain analysis, as described in this section, shall be prepared and submitted along with the preliminary plat application when any portion of the subdivision is within 1,000 horizontal feet of a stream draining an area of 15 square miles or more and no official floodplain designation has been adopted. In consultation with the Floodplain Administrator, the Planning Director may waive the floodplain analysis if it can be clearly demonstrated by a licensed professional engineer or licensed surveyor that a significant topographic feature clearly defines the probable extent of the floodplain.
- B. Preparation. The floodplain analysis shall be prepared by a licensed professional engineer or licensed surveyor.
- C. Basis for Analysis. The floodplain analysis shall be based on one of the following methodologies:
 - (1) Output from the computer model entitled HEC-RAS, or a later version as prepared by the U.S. Corps of Engineers, Hydrologic Engineering Center;
 - (2) A different methodology as approved by the Planning Director and the Floodplain Administrator.
- D. The floodplain analysis shall also be based on cross-sections according to the following minimum requirements:
 - (1) A minimum of five (5) cross-sections shall be placed at representative locations throughout the floodplain reach of the subdivision and located in such a manner as to represent the flow reach between cross sections. Each flow manner shall represent the flow reach between cross sections. Each flow reach shall be as uniform in geometry and roughness as practical.
 - (2) One (1) cross-section shall be taken at the upstream boundary of the proposed subdivision and one (1) cross-section shall be taken at the downstream boundary of the proposed subdivision.
 - (3) Cross-sections shall be required at locations where changes occur in discharge, channel/floodplain slope, shape, or roughness where levees begin/end; and at control structures such as weirs.
 - (4) At least three (3) cross-sections shall be taken and used to describe bridges, culverts, constrictions, or where abrupt channel/floodplain changes occur.
 - (5) One (1) cross-section at each proposed building envelope, as necessary to accurately define the floodplain, within the proposed subdivision and at intervals of no more than five hundred (500) feet shall be required.
 - (6) Two (2) upstream and two (2) downstream cross-sections will be required as necessary to accurately define the floodplain.
 - (7) Additional cross sections may be required if any development associated with the proposed subdivision creates a backwater situation or a rise in base flood elevations or as needed to complete a reasonable HEC-RAS model and floodplain analysis to accurately define the floodplain.

E. Form and Content. Three (3) copies of the floodplain analysis along with a brief description of the project, study objectives and data shall be certified by a licensed professional engineer or a licensed surveyor. The following minimal information shall be submitted with the floodplain analysis:

- (1) Copy of the current FEMA FIRM map, with panel number noted, at the project location showing the location of the surveyed cross sections and the proposed subdivision (if applicable).
- (2) A vicinity map (the latest version of the appropriate USGS 7.5 minute quadrangle or a similar scale aerial photograph) that clearly shows the following:
 - (a) The location of the subdivision and all of the cross-sections;
 - (b) Section, Township, and Range;
 - (c) The location and elevation of all culverts, bridges, levees, diversion dams, or any other type of hydraulic structure within the reach being analyzed;
 - (d) The location of the benchmark (with the NAVD 1988 datum) that was used in the survey; and
 - (e) The hydrologic drainage area of the stream being analyzed;
- (3) A written narrative describing the vegetation along the banks and the material composition of the bed and banks, and any hydraulic structures. Color photographs shall be required when proposed hydraulic data is atypical.
- (4) A written narrative describing all culverts and bridges (size, type, etc.), or any hydraulic structure, within the reach.
- (5) A discussion of the discharge estimation method along with a detailed description of the methodology, data, and computations so that the analysis may be replicated. This shall include:
 - (a) A discussion of the model choice and methodology (i.e. normal depth, step backwater model type);
 - (b) A summary of available gauge sites if applicable and a discussion of discharge estimations;
 - (c) Copies of model input/output printed and on CD or DVD;
 - (d) A discussion of the model parameters used including Manning's "n" values, starting water surface elevations and flow regimes;
 - (e) A discussion of any special concerns, bridges, levees, hydraulic structures, side channels, or ineffective flow areas that may be applicable to the project; and
 - (f) A discussion of model results, warnings, and assumed critical depths.
- (6) Drawings of each cross-section that clearly shows the following:
 - (a) Elevation of the ground surface;
 - (b) Elevation of the water surface at the time of the survey;
 - (c) Elevation of the 100-year floodplain; and
 - (d) The apparent high-water mark.
- (7) A copy of the plat with ground contours (at a sufficient interval to clearly delineate the floodplain boundaries) that clearly shows the following:
 - (a) The location of all cross-sections and elevation reference marks;
 - (b) The water course, property boundaries, proposed lots, building envelopes, and wastewater treatment systems;
 - (c) The location of all culverts, bridges, or any hydraulic structures;

- (d) The location of the FEMA-mapped 100-year floodplain, where applicable; and
 - (e) The location of the actual 100-year floodplain boundary based upon the intersection of the 100-year base flood elevation and the natural grade.
- (8) Additional information may be required if there is potential for adverse effect to adjacent property owners and/or the 100-year base flood elevations are changed.

F. Letter of Approval from the Floodplain Administrator and/or Planning Director.

- (1) Evaluation of the floodplain analysis shall be completed as part of the subdivision review process. The subdivider shall submit to the Planning Department the floodplain analysis approval letter and the preliminary plat showing the delineation of the approved modeled floodplain boundary(ies). The number of copies required to be submitted shall be the same as the required number of applications. (Any revisions to the preliminary plat and/or subdivision application shall be reviewed under Section 3-2-9. Amended Applications.)
- (2) A copy of the floodplain waiver request approval letter shall be submitted with the estimated floodplain boundaries delineated on the preliminary plat for sufficiency review.